Space Weather Forecast

Issued on Saturday, 27 November 2021 at 00:53 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm G1 from late day 1 through to day 3 (27th-29th) due to Coronal Mass Ejections (CME).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been very low over the past 24 hours, with no significant X-ray flares. There are currently two sunspots on the facing side of the sun, both magnetically bipolar and stable, though having grown during the 26th they will be monitored for further development in size or magnetic complexity. Despite this growth, as stated, no significant flares were observed.
At 26/0010 UTC, a faint 'filament eruption' (arc of plasma) was seen in ground-based imagery leaving the northeastern portion of the sun. Imagery for this event has been analysed and weak connection is possible late on day 2 or during day 3 (28th-29th). A further CME from the 24th may impact Earth late on day 1 or early on day 2 (27th-28th).

Solar Wind / Geomagnetic Activity: The solar wind speed fell from slightly elevated to reach background levels. The number of particles in the solar wind rose and then fell back to average values. The magnetic field associated with these particles was unremarkable, as was the north-south component. The net result of the above solar wind measures was quiet geomagnetic indices throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be low, with a daily 40% Chance of common-class flares. The recent growth trend of the two sunspots will be monitored.

Solar Wind / Geomagnetic Activity: The 26/0010 UTC 'filament eruption' in the northeast may give a glancing blow late on day 2 or day 3 (28th-29th). Also, an earlier CME from a filament eruption leaving the Sun 24/1300 UTC may reach Earth late day 1 (27th), possibly early day 2 (28th). There is considered to be a 30% chance of a Minor Geomagnetic Storm G1 from these events, though confidence is low regarding both the arrival time and likely impact.
Quiet to Unsettled geomagnetic activity is otherwise expected with a chance of Active intervals should a second 'coronal hole' become geoeffective into the coming UTC weekend. Both the timing and presence of this aspect low confidence, even if the expected magnitude of effects is more certain (in being small).

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	30	30	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	2	2	2	2
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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